

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

LC 42

In the Matter of)
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PUBLIC UTILITY COMMISSION OF)
OREGON,)
)
In the Matter of PACIFICORP, dba)
PACIFIC POWER & LIGHT COMPANY)
Application for Acknowledgement of its)
2007 Integrated Resource Plan.)

**OPENING COMMENTS ON PACIFICORP 2007
INTEGRATED RESOURCE PLAN
BY RENEWABLE NORTHWEST PROJECT**

September 19, 2007

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Introduction

The Renewable Northwest Project (RNP) provides these opening comments on PacifiCorp’s 2007 Integrated Resource Plan (IRP). While we have several concerns with this 2007 IRP, it is clearly an impressive document, both in its scope and its technical sophistication. RNP recognizes the difficulties in planning for the future amidst risk and uncertainty and appreciates the efforts PacifiCorp has put into developing this IRP.

We applaud PacifiCorp’s inclusion of 2,000 megawatts of new renewable energy resources in the Action Plan and Preferred Portfolio and are pleased to see that the Company has selected a quantity of renewables that exceeds the commitments made by Mid-American Energy Holdings Company (MEHC) during their acquisition of PacifiCorp. This demonstrates that the addition of new renewable energy resources to PacifiCorp’s resource portfolio stands on its own merits as a least-cost, least-risk strategy to reduce fuel price volatility, achieve fuel diversity, reduce risk of future environmental regulations and comply with existing and potential state and federal Renewable Portfolio Standards (RPS).

We do have some major concerns with this 2007 IRP, mainly centered on the continued presence of two new pulverized coal plants and the overall increase in carbon dioxide emissions resulting from PacifiCorp’s preferred portfolio. We believe the proposed PacifiCorp IRP filing is flawed in the following manner:

- A. While the inclusion of 2,000 megawatts of renewable energy resources in the Preferred Portfolio exceeds the Company's obligations under current state Renewable Portfolio Standard (RPS) requirements in Oregon, Washington and California, the IRP fails to adequately account for the possibility of higher RPS obligations, including proposed federal RPS legislation and/or a Utah RPS.
- B. By using wind resources as a proxy for all other renewable energy resources in the IRP, the Company does not adequately evaluate the costs and benefits of other renewable resources. The characteristics of wind energy vary significantly from other renewable energy resources, including geothermal, biomass and solar. By using wind as a proxy for these and other resources, the Company may lose the unique opportunities offered by other renewables.
- C. The IRP fails to adequately account for the capital costs and risks associated with new pulverized coal plant construction. The Company's high-end estimates of pulverized coal plant capital costs do not even encompass the high range of actual recent project costs and the IRP also does not account for the potential for continued increases in capital costs for coal plants. In particular, the IRP does not conduct any sensitivity analysis on coal plant capital cost risks.
- D. The IRP overestimates the value of wholesale electricity sales by failing to take into account interactive effects of RPS policies and CO₂ regulation with wholesale market prices. The result is that the Company overvalues the baseload pulverized coal plants in the Preferred Portfolio and most likely undervalues the market value of low-carbon resources, including renewables and DSM.
- E. The IRP fails to adequately plan for future CO₂ regulation. The IRP's preferred portfolio proposes significantly increasing the Company's CO₂ emissions at time when the policy environment points towards imminent regulation that will mandate, at the bare minimum, no further increase in emissions and will most likely require major decreases in the Company's emissions. The very real risks of such a strategy are consistently downplayed by inadequate analysis and assumptions biased towards low-cost CO₂ regulatory futures.
- F. The IRP fails to fully analyze the potential to capture cost-effective Class 2 DSM (energy efficiency and conservation) resources. The Company's estimates of cost-effective Class 2 DSM resources are significantly lower than other utility estimates from across the country and could be underestimated by a factor of three to four. The IRP also ignores the risk mitigation benefits of Class 2 DSM resources, thus failing to consider these resources in a manner consistent with the least-cost, least-risk principles central to the IRP process.

Specific Comments

A. The IRP Fails to Adequately Plan for Potential Renewable Portfolio Standard Policies

As mentioned above, we applaud PacifiCorp's inclusion of 2,000 MW of renewables in their Preferred Portfolio and Action Plan. And we are thrilled that the Company is actively acquiring new renewable resources, turning their plans into a reality.

We understand, however, that the issue of how renewables will be allocated among the various states in PacifiCorp's system for RPS compliance purposes is still an open question and the subject of much dialogue in ongoing multi-state protocol discussions. Renewables make up 8.5% of the Preferred Portfolio's resource energy mix by 2016 and RPS obligations would only require roughly 6% renewables, leaving some 'excess' renewables for allocation to the east-side of PacifiCorp's system. It is a distinct possibility though that states on the east-side of PacifiCorp's system will be interested in acquiring even more renewables and enjoying the many benefits of renewables as well, the same benefits that motivate RPS policies in the western-side of the Company's system.

Additionally, Utah's Governor Jon Huntsman has convened an advisory group to develop an RPS policy and federal RPS legislation passed the U.S. House of Representatives in August and is heading for conference this fall.¹ Either policy, if enacted, would more than double PacifiCorp's RPS commitments, requiring nearly 13% of the Company's resource energy mix to be renewables by 2020 and over 16% by 2025, by our calculations. If both a federal RPS and a substantial Utah RPS are implemented the company's RPS obligations could be even higher.

Despite the very real possibility that PacifiCorp may be required to acquire significantly more renewables, the IRP does not adequately plan for this potential future. While four of 15 alternative future portfolios include 3,100-3,600 MW of renewables² (roughly 13-15% of the Company's resource energy mix), none of the risk analysis portfolios include more than 2,000 MW of renewables.³ Therefore, the IRP does not include a single fully developed and optimized portfolio that would comply with a possible future in which either (or both) a federal or Utah RPS was enacted.

¹ The House RPS proposal passed on August 4th as an amendment to H.R.3221. The amendment was sponsored by Representative Tom Udall (D-NM) and passed 220-190 in Roll Call Vote 827. See <http://clerk.house.gov/evs/2007/roll827.xml>.

² PacifiCorp, *2007 Integrated Resource Plan*, page 141.

³ *ibid.* pages 155 and 180.

B. The IRP Fails to Properly Evaluate Costs and Benefits of Different Renewable Energy Resources

The IRP guidelines adopted in OPUC Order 07-002 direct utilities to consider “all known resources for meeting a utility’s load” and states that “all resources must be evaluated on a consistent and comparable basis.”⁴ This guideline is consistent with the previous IRP guidelines adopted in Order 89-507.⁵

PacifiCorp chose to use wind resources as a proxy for all other renewable energy resources in this IRP.⁶ They pre-screened many renewable energy resources out of the IRP analysis and failed to properly evaluate the costs and benefits of various available renewable energy resources, including geothermal, biomass and solar resources.

Wind, solar, geothermal, biomass and other renewables all have different characteristics, including cost structures, dispatchability, technology risks and CO₂ risks. While some resources – wind and solar, for example – have similar operating characteristics, no one resource can stand as an adequate proxy for all others. Each resource type offers different potential benefits and costs to a portfolio and each should be evaluated on its particular merits. By utilizing wind as a proxy for all other renewables, including baseload renewables like geothermal and biomass, PacifiCorp loses the potential of renewables to contribute significant capacity value to PacifiCorp’s resource portfolio, potentially eliminating the need for one or more baseload thermal resources.

PacifiCorp has a very large and geographically diverse service territory with transmission access to an even broader area. The Company therefore has access to a wide variety of renewable energy resources and should properly consider each of these resources on a consistent and comparable basis.

Additionally, while the Company pre-screens out some resource options due to their high costs, that does not appear to be an appropriate reason to pre-screen out geothermal and biomass. PacifiCorp includes geothermal and biomass resources in the tables of supply-side resources options and both resources are shown to have the lowest total resource costs of any resource option.⁷ These low-cost renewable resources are also very low-risk resources as they are sheltered from CO₂ and most other environmental regulations and all or most fuel cost risks. Moreover, PacifiCorp has significant experience with geothermal resources and has considered additional geothermal resource acquisitions. The Company’s own Renewable Energy Action Plan also states that they are acquiring biomass resources in Oregon.⁸ Given its stated need for baseload resources and the plans to acquire two new baseload coal plants, these renewables should be evaluated in the IRP.

⁴ See OPUC Order 07-002, Appendix A, page 1 (Guideline 1.a.).

⁵ See OPUC Order 07-002, page 3.

⁶ PacifiCorp, *2007 Integrated Resource Plan*, page 7 and page 14.

⁷ *ibid.* pages 93-96 (Tables 5.1-5.4)

⁸ PacifiCorp, *Renewable Energy Action Plan*, filed in OPUC Docket UM 1209 (May 30, 2007). See page 3.

Furthermore, the IRP includes no consideration of distributed solar resources, including rooftop photovoltaics (PV). While solar PV currently has fairly high resource costs, these costs are decreasing. Additionally, these costs can be shared between the utility, state and federal incentive programs, and customers, who are often willing to pay a large percentage of the cost of a rooftop solar array themselves. Therefore, a utility is unlikely to bear the full costs of solar PV resources, making solar PV a potentially economic resource option for PacifiCorp. The Company should alter its analysis of solar resources to include only the resource costs born by the utility. As an on-site generation resource whose cost structure is shared by several entities (i.e. utility, customer, government incentives), distributed solar PV should probably be evaluated as a demand-side resource whose costs are compared to an appropriate avoided cost. Distributed solar PV generates the most energy during peak load hours and this should be taken into account when developing an appropriate avoided cost.

PacifiCorp's service territory includes areas of excellent solar potential and distributed solar PV could contribute significant energy to the Company's resource portfolio, much of it generated during peak-load, high market price hours. Distributed solar PV resources should be included in the IRP process, particularly for a utility like PacifiCorp with sharp summer peaks and excellent solar potential across much of its service territory.

C. The IRP Fails to Account for Capital Cost Risks of Coal Plants

We are concerned that the IRP does not adequately consider the capital cost risks of pulverized coal plants. While the resource options presented in the IRP include a range of capital cost estimates for pulverized coal plants,⁹ it only spans a range of about 16% and the high capital cost estimate is only up to \$2,266/kW. According to a Union of Concerned Scientists survey of recent coal plant capital costs, at least six new coal plants have announced 30-80% capital cost increases in the past year and current costs range all the way up to \$2,445/kW.¹⁰

Given the recent significant increases in capital costs for new coal plants, we believe that capital cost risks associated with pulverized coal plants present a major risk to the Company's Preferred Portfolio. Furthermore, this risk is not examined in the current IRP. The range of capital costs for new pulverized coal plants included in the IRP does not even encompass the range of current actual construction costs, and while PacifiCorp performs sensitivity analysis to examine the effects of higher or lower than expected capital costs for wind and IGCC resources, the IRP does not examine the effects of higher than expected capital costs for pulverized coal resources.¹¹ The IRP should fully examine candidate portfolio's exposure to coal plant capital cost risks, just as it examines exposure to capital cost risks for wind and IGCC resources.

⁹ PacifiCorp, *2007 Integrated Resource Plan*, page 93.

¹⁰ Clemmer, Steve, Union of Concerned Scientists, *Gambling with Coal: How Future Climate Laws Will Make New Coal Plants More Expensive*, (Presented at NARUC Summer Meetings, July 16, 2007), see Attachment A.

¹¹ PacifiCorp, *2007 Integrated Resource Plan*, page 125.

D. The IRP Fails to Consider Interactive Effects of RPS Policies and CO₂ Regulation with Wholesale Electricity Prices

The IRP fails to consider two important interactive effects of RPS and CO₂ policies with wholesale electricity prices. We are therefore concerned that the IRP overestimates the wholesale value of electricity generated at PacifiCorp's baseload power plants, in particular, pulverized coal plants.

First, it is unclear whether the impact of increasing renewable energy production throughout the region mandated by existing and potential state and federal RPS policies is reflected in either the base wholesale electric price assumptions, or in stochastic analysis. A likely result of the move toward less-dispatchable, but much more prevalent renewable energy sources will be to depress wholesale electric prices, at least for short periods of time (i.e. off-peak periods when output from wind facilities may be high and loads low). Such a scenario could decrease the value of PacifiCorp's baseload coal-fired power plants, including the two new pulverized coal plants included in the Preferred Portfolio, since the value of these facilities to the Company is greatly dependent on the sale of power from these facilities into the market.

Second, the IRP's discussion of factors affecting market rates¹² does not adequately consider the effects of existing and potential state or federal climate change policies and CO₂ regulation, including emissions performance standards and cap-and-trade programs.

Emissions performance standards have already passed in California and Washington and will likely be considered in Oregon.¹³ Greenhouse gas emissions reduction targets are also now in statute in Oregon, Washington, and California and rulemaking is underway for California's binding emissions reduction legislation, AB 32. Furthermore, the governors of Arizona, California, New Mexico, Oregon, Washington and Utah and the premiers of British Columbia and Manitoba have joined the Western Climate Initiative and have pledged to develop a "design for a regional market-based multi-sector mechanism, such as a load-based cap-and-trade program, to achieve the regional GHG reduction goal" to reduce GHG emissions 15% below 2005 levels by 2020.¹⁴ Congress is also expected to consider federal climate change legislation this year and numerous binding emissions reduction proposals have been introduced in the 110th Congress.¹⁵

Emissions performance standards and binding greenhouse gas reduction mechanisms will almost certainly affect the market prices of electricity generated by various resources, with carbon-free renewable energy fetching higher market prices and carbon-intensive coal-fired generation receiving lower value, if saleable at all. Additionally, the carbon

¹² PacifiCorp, *2007 Integrated Resource Plan*, page 29.

¹³ The Oregon PUC has indicated it plans to explore emissions performance standards in an upcoming docket. See OPUC Order 07-002, page 3, footnote 5.

¹⁴ Western Regional Climate Action Initiative Governor's Agreement (February 26, 2007), p. 2. <http://www.westernclimateinitiative.org/ewebeditpro/items/O104F12775.pdf>

¹⁵ See Opening Comments of the Joint Parties in OPUC Docket UM 1302, pages 4-15 for a survey of the current federal, regional and state policy environment of climate change regulations.

content of a utility's system mix will likely affect the market price of undifferentiated wholesale system sales and purchases, with lower carbon utilities able to command a higher price on the market than those with a carbon-intensive system mix. While this would clearly affect the relative value of candidate resources and portfolios, it appears that the IRP ignores this important interactive effect of future climate change regulation and market prices. According to PacifiCorp, the Company assumes that wholesale sales carry with them a carbon content equivalent to the Company's system average emissions rate (including net wholesale purchases) of 0.822 tons CO₂/MWh.¹⁶ The Company assumes that wholesale market purchases have a much lower emissions rate of 0.565 tons CO₂/MWh, a figure reportedly based on the Company's actual 2005 purchases.¹⁷

However, despite the difference in emissions rates associated with purchases and sales, the Company assumes that wholesale purchases and sales both have the same market value. This assumption is not justified. In the future, when CO₂ emissions have a monetary value, market prices for wholesale purchases and sales will reflect this amount. For example, PacifiCorp's wholesale market sales have an emissions rate 0.257 tons/MWh higher than wholesale market purchases.¹⁸ Under a \$61 carbon adder future, for example, PacifiCorp's wholesale market sales would then presumably be valued at \$15.68/MWh less than market purchases, a roughly 15-30% decrease in the value of wholesale sales.¹⁹ Under future carbon regulation, the carbon-intensity of PacifiCorp's system mix may therefore seriously degrade the value of the Company's market sales and affect the PVRR of candidate portfolios, especially portfolios with coal-heavy resource mixes and large amounts of net wholesale sales, including the Preferred Portfolio. We have submitted several data requests to the Company to explore this issue, but initial responses²⁰ indicate that this issue is not considered in the IRP.

We also have questions about how the Company nets wholesale sales and purchases and the effect this has on the total emissions associated with candidate portfolios. If sales and purchases are netted on an hourly basis, candidate portfolios with net sales will have a much lower emissions rate than if sales and purchases are netted on an annual basis. We are therefore concerned that in failing to fully examine the connection between wholesale purchases and sales and their associated emissions, the Company has inadvertently underestimated the carbon-intensity of its portfolios, including the Preferred Portfolio. We have submitted several data requests on this issue and are awaiting a response from the Company. We will therefore explore this issue further in reply comments.

¹⁶ See Attachment B, PacifiCorp's response to NW Energy Coalition Data Request 9.c.

¹⁷ PacifiCorp, *2007 Integrated Resource Plan*, page 134.

¹⁸ 0.822 tons/MWh – 0.565 tons/MWh = 0.257 tons/MWh.

¹⁹ 0.257 tons/MWh * \$61/ton = \$15.68/MWh. PacifiCorp seems to predict wholesale electricity prices roughly between \$50-100/MWh (depending on if sold/purchased during heavy or light load hours). \$15.68/MWh is therefore roughly 15-30% of the market value of sales. See PacifiCorp, *2007 Integrated Resource Plan*, Appendix A, page 17 (Figure A.3).

²⁰ See Attachment C, PacifiCorp's response to NW Energy Coalition Data Request 10.

E. The IRP Fails to Adequately Plan for Future CO₂ Regulation

PacifiCorp states in the IRP's planning principles that the Company "believes that CO₂ regulation will come into play during the 10-year resource acquisition period that is the focus of this IRP" and recognizes that "potential carbon dioxide emission costs serve as a major source of portfolio risk."²¹ The Company also recognizes the importance of climate change as "an issue that requires attention from the energy sector."²²

This is something of an understatement considering that global climate change caused by the release of greenhouse gases is now thought to pose perhaps the greatest threat to the health of the environment and threatens billions of humans with adverse effects, including drinking water and food shortages, increased spread of infectious diseases, and increased incidence of heat waves, floods, droughts and other extreme weather events.²³ Additionally, considering the current regulatory environment, it seems almost certain that PacifiCorp will be subject to considerably more severe regulation of global warming pollutants within the planning horizon considered in this IRP.

In the face of such growing scientific and regulatory certainty, the time for simply 'paying attention' to global climate change and the Company's greenhouse gas emissions inventory has passed; it is now time for action.

The IRP enunciates a "Corporate Greenhouse Gas Mitigation Strategy"²⁴ that not only seems insufficient to the task, but is hardly an active strategy at all. PacifiCorp's general 'mitigation strategy' seems to be to wait until there are changes in the law, such as the imposition of a carbon tax or cap-and-trade system, before taking any actions to reduce the Company's greenhouse gas emissions in absolute terms. While the Company includes more emissions-free resources and demand side management in the Preferred Portfolio than in earlier candidate portfolios (i.e. Group 1 portfolios), these efforts are insufficient to reduce the Company's total greenhouse gas emissions when the Portfolio also includes additional new carbon-intensive resources, including pulverized coal.²⁵

We believe the Company must reduce its total greenhouse gas emissions. Any plan that results in an increase in greenhouse gas emissions can no longer be considered prudent, given the current scientific certainty and regulatory environment on global climate change. We contend that any proposal to add carbon-intensive power facilities could only be acceptable in the context of an overall plan to reduce total emissions related to serving load.

We recognize that PacifiCorp has been working to "examine best utility practices for addressing carbon risk" through their Global Climate Change Working Group and that

²¹ PacifiCorp, *2007 Integrated Resource Plan*, page 14.

²² Ibid. page 32.

²³ See Intergovernmental Panel on Climate Change, *Fourth Assessment Report*, "Working Group II Report: Impacts, Adaptation and Vulnerability" April 2007. <http://www.ipcc.ch/SPM13apr07.pdf>

²⁴ PacifiCorp, *2007 Integrated Resource Plan*, page 41.

²⁵ See *ibid.* pages 194-197 (Tables 7.24-7.25 and 7.28-7.29).

the Company plans to file with state regulators a Global Climate Change Action Plan sometime in 2007.²⁶ We hope that this action plan will be proactive and that it will directly impact the IRP process and elevate the importance of reducing the Company's greenhouse gas emissions in the IRP.

PacifiCorp performs some sensitivity analysis of different regulatory futures relating to greenhouse gas emissions and attempts to adopt a preferred portfolio that reduces risk to the Company and ratepayers from greenhouse gas emissions. The treatment of carbon risk in utility IRPs is currently the subject of the ongoing OPUC docket UM 1302, and we recognize that there will be continued dialogue and discussion on this topic in this and other forums. We also recognize that the techniques used in this IRP are both more sophisticated and more robust than in previous IRPs. However, we believe the treatment of carbon risk and greenhouse gas reduction strategies is not yet adequate in this IRP for a number of reasons:

1. The Company never conducts robust analysis of a resource portfolio that actually reduces the Company's total greenhouse gas emissions in preparation for increasingly likely future regulation requiring such a reduction. None of the Risk Analysis Portfolios presented in the draft IRP result in significant reductions in the Company's total greenhouse gas emissions and at best result in total emissions in 2016 that are roughly the same as current emissions levels (and even then, only under the \$61/ton adder case).²⁷ Even Risk Analysis Portfolio 11, which is described as designed to "[test] the strategy of reducing CO2 cost risks with additional wind and restrictions on pulverized coal," includes no fewer than seven new coal-fired power plants.²⁸

In response to stakeholder encouragement, the Company did include a portfolio designed to comply with emissions performance standards as a late addition to the IRP.²⁹ This portfolio has no new coal plants and begins to achieve emissions reductions under higher adder scenarios. The inclusion of this portfolio in the IRP is a promising start. However, even this portfolio fails to achieve the emissions reduction targets proposed by the Western Climate Initiative (a 15% reduction by 2020), let alone the larger reductions proposed by state and federal legislation (e.g. a return to 1990 levels by 2020).³⁰ Additionally, as a late addition to the IRP, we suspect that this portfolio has not been fully optimized to reduce risk. For example, while the portfolio reduces exposure to carbon risk, the Company reports that this comes at a tradeoff of increased exposure to gas price risk.

²⁶ Ibid. page 43.

²⁷ Ibid. page 196.

²⁸ Ibid. page 159.

²⁹ See *ibid.* pages 213-219.

³⁰ See Opening Comments of the Joint Parties in OPUC Docket UM 1302, pages 4-15 for a survey of the current federal, regional and state policy environment of climate change regulations, including reduction targets of various proposals. We found remarkable agreement in the range of proposals with all current proposals allowing an increase in emissions over current levels and the vast majority proposing a return to historic 1990 emissions levels within the 2015-2030 time frame.

However, we suspect that the Company did little to analyze ways in which gas price risk could be mitigated for this portfolio, by including additional renewables or DSM resources, for example.

2. The IRP does not consider the possibility that PacifiCorp will be forced to close carbon-intensive generating resources (e.g. pulverized coal plants) prematurely due to increased carbon regulation. The IRP should include risk analysis that considers shorter economic life for new coal plants and considers early retirement of existing coal resources. According to the Northwest Power and Conservation Council, “to stabilize [the region’s] CO₂ production at 2005 levels or to reduce CO₂ production to 1990 levels,” as is the goal of the majority of proposed climate change regulation,³¹ “would require substituting low CO₂-producing resources or additional conservation for ... existing coal-fired power plants.”³² The early closure of carbon-intensive generation resources is therefore a very real possible outcome of future regulation designed to reduce emissions below current emissions levels, and the Company should pay close attention to this risk in their IRP.
3. The range of carbon adders included in the IRP does not accurately reflect the current policy environment. In opening comments in OPUC Docket UM 1302, we presented a survey of current federal climate change policy proposals and the estimated carbon prices under these regulations. This survey shows that a range of carbon adders from \$25-\$110 would correspond to the current range of federal climate change policy proposals.³³ The Company consistently maintains that is unwise to assign probabilities to various policy proposals at this time,³⁴ and yet by not including the higher adder values that would correspond with the full range of current policy proposals, the IRP implicitly biases carbon risk analysis towards lower carbon futures, underestimating the risk exposure of carbon-intensive portfolios, including the Preferred Portfolio.

Furthermore, our survey demonstrates that the \$8/ton base case carbon adder included in this IRP is based on an out-of-date policy proposal. The Company has stated in previous IRP workshops that this \$8 adder value is based on cap-and-trade regulation proposed by Senator Jeff Bingaman during the 109th Congress. However, Senator Bingaman has replaced this proposal with a more aggressive policy in the current 110th Congress. According to our survey, this new proposal, S.1766, would correspond to a levelized adder value of \$25/ton, not \$8, a significant increase.³⁵ By using a base case adder value based on outdated policy proposals, the IRP fails to adequately plan for the current policy

³¹ See previous footnote.

³² Northwest Power and Conservation Council, *Carbon Dioxide Footprint of the Northwest Power System* (September 13, 2007), page 4. <http://www.nwcouncil.org/library/2007/2007-15.pdf>

³³ See Opening Comments of the Joint Parties in OPUC Docket UM 1302, page 19, Table 4.

³⁴ PacifiCorp 2007 *Integrated Resource Plan*, page 14.

³⁵ See Opening Comments of the Joint Parties in OPUC Docket UM 1302, page 19, Table 4 and page 32, Appendix 1.

environment and again underestimates the carbon risk exposure of candidate portfolios.

4. The IRP assumptions regarding cap-and-trade regulation are unrealistic in high adder scenarios. The Company assumes that cap-and-trade regulations cap emissions at 2000 emissions levels regardless of the adder level.³⁶ Due to this assumption, the Company assumes that it will be granted an ample supply of free carbon allowances and will even turn a profit under cap-and-trade scenarios, even at high adder levels. This assumption is inappropriate for high carbon adder scenarios and underplays the carbon risk of the Company's Preferred Portfolio.

Our survey of current climate change policy proposals reveals that a carbon adder of \$61/ton roughly corresponds to a policy that requires a return to 1990 emissions levels by 2020, not simply a cap at current or year 2000 emissions levels.³⁷ Additionally, as we argued above, the Company should be examining even higher carbon adders, which would correspond to even greater emissions reduction requirements. By assuming that even in high adder cases, the Company has excess emissions allowances to sell into the market, PacifiCorp greatly underestimates the carbon risk of its more carbon intensive portfolios.

In RNP Attachment D, we present an initial estimate of how these unrealistic assumptions affect the PVRR of the Preferred Portfolio, RA 14, under high carbon adder futures of \$61/ton and \$100/ton. We update the assumptions in PacifiCorp's response to NWECC Data Request 8_a³⁸ to include more realistic assumptions for emissions allowance levels under cap-and-trade policies that would result in \$61/ton and \$100/ton carbon values. This initial analysis demonstrates that the IRP is likely underestimating the PVRR of the Preferred Portfolio by roughly 13% under the \$61 cap-and-trade scenario and roughly 30% under a \$100 adder scenario. The IRP therefore greatly underestimates the Preferred Portfolio's exposure to carbon risk under possible future cap-and-trade policies.

5. Finally, by applying equal weights to each of the carbon adders considered in the IRP (\$0, \$8, \$15, \$34 and \$61), the IRP biases risk exposure metrics towards the lower adder futures. The median value in the range \$0/ton-\$61/ton is \$30.50/ton. However, since the majority of the adder values considered in the IPR are below this median the average of the five adder values is only \$23.60/ton,. Furthermore, if the Company considered the adder values corresponding with the full range of current policy proposals (i.e. at least up to \$110/ton), an appropriate median value would be \$55/ton. By ignoring the upper ranges of possible adder scenarios and by including more adder scenarios on the low-end of possible futures, the IRP is

³⁶ PacifiCorp 2007 *Integrated Resource Plan*, page 133.

³⁷ See Opening Comments of the Joint Parties in OPUC Docket UM 1302, page 19, Table 4.

³⁸ See Attachment E, PacifiCorp's response to NW Energy Coalition Data Request 8.

biased towards the low adder futures and again does not adequately evaluate the carbon risk exposure of candidate portfolios.

We believe the IRP should conduct a significantly more robust analysis of carbon risks and should accurately reflect the current range of policy proposals. Furthermore, PacifiCorp's planning process must fully consider a proactive strategy to reduce the Company's overall greenhouse gas emissions. This IRP presents an inadequate response to the near-certainty of increased global warming pollution regulation. We believe the Company's greenhouse gas mitigation strategy needs to be elevated to an equal position with cost and risk as a planning consideration in this and future IRPs.

F. The IRP Underestimates the Potential of Cost-Effective Class 2 DSM Resources

OPUC Order 07-002 (as well as the previous order relating to integrated resource planning, Order 89-507) states, "All known resources for meeting the utility's load should be considered, including supply-side options ... and demand-side options which focus on conservation and demand response" and further directs utilities to evaluate these resources "on a consistent and comparable basis."³⁹ Additionally, the Order states, "the utility should include in its action plan all best cost/risk portfolio conservation resources for meeting projected resource needs..."⁴⁰

We are concerned that the treatment of Class 2 DSM (energy efficiency and conservation) in the IRP fails to consider these resources "on a consistent and comparable basis" with other supply-side and demand-side resources. Energy efficiency and conservation resources are not a fixed resource. The utility can capture more conservation and efficiency in response to changing conditions by increasing incentives paid to customers, increasing marketing efforts and other changes in conservation and efficiency programs. Conservation resources are frequently the most cost-effective and flexible resources available to utilities. This flexibility makes Class 2 DSM particularly useful in responding to changing market conditions, including increased electricity prices and new environmental regulations. Furthermore, Class 2 DSM resources are insulated from virtually every risk of traditional supply-side resources.

Class 2 DSM resources are not modeled in this IRP as a true resource option that can be scaled up and down in IRP portfolios to help optimize cost and risk. Rather, they are modeled as a decrement to loads in a fixed amount equal across all portfolios.⁴¹ The amount of Class 2 DSM included in the portfolios does not therefore vary in response to alternative futures and sensitivity analysis. It is difficult for us to see how this methodology adequately determines the optimal amount of Class 2 DSM to include in a candidate portfolio on a least-cost *and* least-risk basis. Additionally, we suspect that the

³⁹ See OPUC Order 07-002, Appendix A, page 1 (Guideline 1.a.).

⁴⁰ *ibid.* page 6 (Guideline 6.b.).

⁴¹ PacifiCorp, *2007 Integrated Resource Plan*, page 112.

Company does not consider the risk mitigation value of Class 2 DSM resources when determining the avoided cost used to calculate if a conservation or efficiency resource is cost-effective.⁴² If true, this would further undervalue Class 2 DSM resources and their risk-mitigation potential.

Perhaps due to these issues, the IRP greatly underestimates the potential of Class 2 DSM resources. The IRP states that identified and budgeted Class 2 DSM programs included in each portfolio as a decrement to load will be sufficient to reduce total electricity usage by 227 average MW (aMW), just 2.7% of the PacifiCorp's total projected load in 2016.⁴³ This is far below estimates of achievable DSM potential from across the country. For example, the Western Governor's Association's Energy Efficiency Task Force reported that leading utilities in the West are investing at least 2% of their revenues in DSM programs and are cutting electricity use by 8-10% over a ten year period (0.8-1.0% per year).⁴⁴ The WGA report goes on to state, "Most of these programs are saving electricity at a total cost of 2-3 cents per kWh saved."

Other Western utilities are therefore capturing *three to four times* as much Class 2 DSM as PacifiCorp plans in this IRP and they are doing so at a very low total cost. The Company does not present any justification to assume that similarly ample low-cost conservation and efficiency potential exists throughout PacifiCorp's service territory, especially given the high load growth throughout the Company's territory.

Conclusions

RNP appreciates the Commission's consideration of these initial comments on PacifiCorp's 2007 IRP. We will continue to analyze the IRP with the benefit of responses to data requests and provide a final recommendation to the Commission with our reply comments.

⁴² We have filed data requests on this issue and are awaiting a response from the utility.

⁴³ PacifiCorp projects total system-wide load in 2016 of 72,305,522 MWh, the equivalent of 8,254 aMW of load (see PacifiCorp, *Draft 2007 Integrated Resource Plan*, page 63). The Company includes 227 aMW of total Class 2 DSM resources in their decrement to load forecasts (see Appendix A, page 6). Class 2 DSM therefore represents just 2.67% of total forecasted load in 2016 before the Class 2 DSM resources are decremented from load ($227 / (8,254+227) = 2.67\%$).

⁴⁴ Western Governor's Association, Clean and Diversified Energy Initiative, *Energy Efficiency Task Force Report* (January 2006), page 5. <http://www.westgov.org/wga/initiatives/cdeac/Energy%20Efficiency-full.pdf>

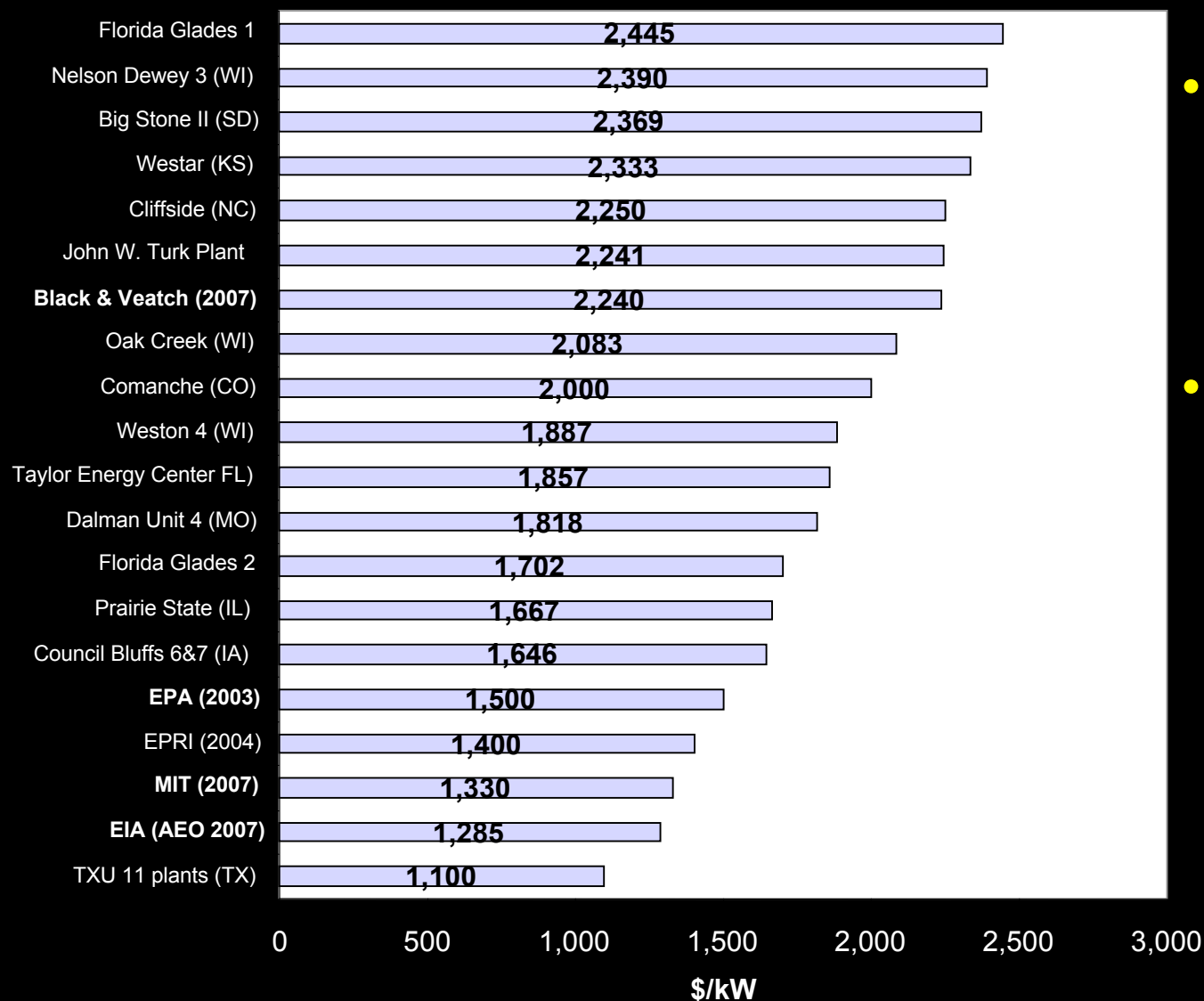
OPENING COMMENTS ON PACIFICORP 2007
INTEGRATED RESOURCE PLAN
BY RENEWABLE NORTHWEST PROJECT

ATTACHMENTS A-E

ATTACHMENT A

Slide 19 from Clemmer, Steve, Union of Concerned Scientists, *Gambling with Coal: How Future Climate Laws Will Make New Coal Plants More Expensive*, (Presented at NARUC Summer Meetings, July 16, 2007).

Coal plant costs are increasing



- **Coal rush creating supply constraints**
- **At least 6 plants have announced 30-80% cost increases in the past year**

ATTACHMENT B

PacifiCorp's response to NW Energy Coalition Data Request 9.c.

NWECC Data Request 9

Chapter 6, p. 134, 2nd paragraph under the heading Carbon Dioxide Emissions.

- (a) The second sentence apparently is a typo, because it is not a complete sentence. What was it supposed to say?
- (b) It states that “The indirect CO₂ emissions related to purchases are calculated by multiplying net purchased power generation by an average emissions factor of 0.565 tons/MWh which is offset by emissions deemed to go with wholesale sales at the average system emission rate.” (emphasis added.) What is the average system emission rate used?
- (c) Please provide a breakdown of how the average system emission rate was calculated. Specifically, how were system sales and purchases accounted for?
- (d) If the answer to (c) is that sales and purchases were included in the calculation of average system emission rate, please calculate the rate if those sales and purchases were excluded.

Response to NWECC Data Request 9

- (a) The entire sentence can be ignored; the sentence that follows the referenced sentence was meant to replace it.
- (b) The average system emission rate is the annual pounds of CO₂ emissions from company-owned resources and wholesale purchases per megawatt-hour of total system resources.
- (c) The table below shows the derivation of the average system emission rate using 2007 as the representative year. The calculation includes wholesale purchases but excludes wholesale sales, since this rate is intended to reflect emissions attributable to meeting both retail and wholesale load.

Calculation of Average System Emission Rate

	Units	Formula	CY 2007
<u>Emissions</u>			
Thermal Generation	(Tons 000)		54,167
Wholesale Purchase ^{1/}	(Tons 000)		<u>5,654</u>
Total		(a)	59,821
<u>Energy</u>			
Thermal Generation	GWh		54,032
Wholesale Purchase	GWh		10,007
Other Energy ^{2/}	GWh		<u>8,778</u>
Total		(b)	72,817
Calculate Emission Tons per MWh	Ton / MWh	(a) / (b) = (c)	0.822
Conversion Tons to lbs	Ton to lbs	(d)	<u>2,000</u>
Average System Emission Rate	(lbs/MWh)	(c) * (d)	<u>1643.1</u>

^{1/} includes Long Term Purchase Contracts, Front Office Transactions, and System Balancing Purchases

^{2/} includes Wind Renewables, Owned Hydro, DSM Class 1, and Storage / Exchanges

(d) As mentioned in response c, the average CO2 system emission rate includes wholesale purchases but excludes wholesale sales. Using the calculation from response c above, the system emission rate excluding wholesale purchases is 1,725 lbs/MWh (Thermal Generation / Thermal Generation + Other Energy * 2,000).

ATTACHMENT C

PacifiCorp's response to NW Energy Coalition Data Request 10.

NWECC Data Request 10

- (a) What is PacifiCorp's assumption in this IRP regarding which party—buyer or seller—gets the emissions for sales and purchases.
- (b) Is the answer different for short-term balancing transactions, front-office transactions, or long-term contracts?

Response to NWECC Data Request 10

- (a) PacifiCorp made no assumption in this IRP regarding which party gets the emissions for sales and purchases. The company reported the emissions in the 2007 Integrated Resource Plan associated with serving retail loads as described in the Response to NWECC Data Request 9.
- (b) No; the answer is the same for short-term balancing transactions, front-office transactions, or long-term contracts.

ATTACHMENT D

RNP analysis of PacifiCorp cap-and-trade scenario assumptions.
See accompanying spreadsheet [RNP_Attachment_D.xls](#).

ATTACHMENT E

PacifiCorp's response to NW Energy Coalition Data Request 8.
See also accompanying spreadsheet RNP_Attachment_E.xls.

NWECC Data Request 8

- (a) Please provide a detailed calculation of the “Total Emission Cost” in Table D.4 of Appendix D (p. 123) for portfolio RA14.
- (b) Please provide the same calculation of the “Total Emission Cost” for the GHG Portfolio discussed in Chapter 7, beginning p. 213.
- (c) Why are these negative?

Response to NWECC Data Request 8

- (a) The response is provided as Attachment NWECC 8a.
- (b) The response is provided as Attachment NWECC 8b.
- (c) As shown in the spreadsheets provided as responses (a) and (b), the CO₂ cap-and-trade modeling framework assumes that PacifiCorp can sell as well as purchase allowances priced at the CO₂ allowance cost. Consequently, if system CO₂ emissions are below the CO₂ cap in a particular year, the Company receives a CO₂ emissions credit (negative emission cost) equal to the difference between the actual emissions and the cap amount multiplied by the allowance cost. Because the IRP models account for the CO₂ cost adder in their unit dispatch solutions, a simulation can result in sizable annual emission credits due to ramping down of coal generation and ramping up of other resources with lower CO₂ emissions.

PacifiCorp System Emissions

Cap & Trade Method
(\$ 000)

2000 Emissions levels:
1990 Emissions levels:

	2007	2008	2009
Number of Allowances			
\$8 case, PacifiCorp assumptions	-	-	-
\$38 case, PacifiCorp assumptions	-	-	-
\$61 case, PacifiCorp assumptions	-	-	-
\$61 case, realistic assumptions			
\$100 case, PacifiCorp assumptions	-	-	-
\$100 case, realistic assumptions			
Tons Actual from PaR (1000s)			
RA 14	54,167	53,971	52,914

Inflation Rate: 0.0182

Allowance Value (\$/ton)	Adder Value (2008\$)			
\$8 case, PacifiCorp assumptions	\$8	-	-	-
\$38 case, PacifiCorp assumptions	\$38	-	-	-
\$61 case, PacifiCorp assumptions	\$61	-	-	-
\$61 case, realistic assumptions	\$61	-	-	-
\$100 case, PacifiCorp assumptions	\$100	-	-	-
\$100 case, realistic assumptions	\$100	-	-	-

Net Emission Cost	NPV (2007 to 2026) (Millions \$)	Difference in NPV	(PaR Tons less Allowance Tons M (Negative values indicate net pro
RA 14:			
\$8 case, PacifiCorp assumptions	(210)		- - -
\$38 case, PacifiCorp assumptions	(999)		- - -
\$61 case, PacifiCorp assumptions	(1,339)		- - -
\$61 case, realistic assumptions	1,350	2,689	- - -
\$100 case, PacifiCorp assumptions	(2,195)		- - -
\$100 case, realistic assumptions	4,972	7,168	- - -

53,002
45,052

	2010	2011	2012	2013	2014	2015	2016
	53,002	53,002	53,002	53,002	53,002	53,002	53,002
	53,002	53,002	53,002	53,002	53,002	53,002	53,002
	53,002	53,002	53,002	53,002	53,002	53,002	53,002
	53,002	53,002	53,002	53,002	53,002	51,677	50,352
	53,002	53,002	53,002	53,002	53,002	53,002	53,002
	53,002	53,002	53,002	51,445	49,888	48,331	46,774
	50,354	48,668	46,045	45,517	47,276	47,630	48,557
	4.15	6.33	8.60	8.75	8.91	9.08	9.24
	19.70	30.08	40.84	41.59	42.34	43.11	43.90
	31.62	37.56	43.71	50.07	56.64	63.44	70.47
	31.62	37.56	43.71	50.07	56.64	63.44	70.47
	51.84	61.58	71.65	82.08	92.86	104.00	115.52
	51.84	61.58	71.65	82.08	92.86	104.00	115.52

ultiplied by Allowance Value)

fit to utility, positive values are net cost)

(10.98)	(27.45)	(59.82)	(65.54)	(51.05)	(48.76)	(41.09)
(52.17)	(130.38)	(284.15)	(311.30)	(242.48)	(231.62)	(195.16)
(83.74)	(162.78)	(304.09)	(374.78)	(324.37)	(340.83)	(313.29)
(83.74)	(162.78)	(304.09)	(374.78)	(324.37)	(256.77)	(126.54)
(137.28)	(266.86)	(498.50)	(614.40)	(531.76)	(558.74)	(513.58)
(137.28)	(266.86)	(498.50)	(486.61)	(242.61)	(72.97)	205.86

2017	2018	2019	2020	2021	2022	2023	2024	2025
53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002
53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002
53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002
49,027	47,702	46,377	45,052	43,727	42,402	41,077	39,752	38,427
53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002
45,218	43,661	42,104	40,547	38,990	37,433	35,876	34,319	32,762
49,331	50,462	52,204	52,620	52,311	52,724	52,676	53,512	54,132
9.41	9.58	9.76	9.93	10.11	10.30	10.49	10.68	10.87
44.70	45.51	46.34	47.18	48.04	48.92	49.81	50.71	51.64
71.75	73.06	74.39	75.74	77.12	78.52	79.95	81.41	82.89
71.75	73.06	74.39	75.74	77.12	78.52	79.95	81.41	82.89
117.62	119.77	121.95	124.16	126.42	128.73	131.07	133.45	135.88
117.62	119.77	121.95	124.16	126.42	128.73	131.07	133.45	135.88
(34.54)	(24.34)	(7.78)	(3.80)	(6.99)	(2.86)	(3.42)	5.44	12.28
(164.09)	(115.63)	(36.98)	(18.04)	(33.20)	(13.61)	(16.24)	25.86	58.35
(263.40)	(185.61)	(59.36)	(28.96)	(53.29)	(21.85)	(26.08)	41.52	93.67
21.82	201.61	433.48	573.20	662.02	810.53	927.39	1,120.20	1,301.81
(431.81)	(304.28)	(97.30)	(47.47)	(87.36)	(35.81)	(42.75)	68.06	153.56
483.87	814.52	1,231.72	1,499.06	1,684.15	1,968.36	2,201.97	2,561.41	2,903.84

2026

53,002
53,002
53,002
37,102
53,002
31,205

54,874

11.07
52.57
84.40
84.40
138.36
138.36

20.72
98.41
157.97
1,499.94
258.97
3 274 73

PacifiCorp System Emissions**RA14 Portfolio****Cap & Trade Method****(\$ 000)**

Base Line Allowances	NPV (2007 to 2026)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Allowance Value (\$/ton)																					
CO2	-	-	-	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002	53,002
SO2	157	157	157	64	64	64	64	64	64	64	64	64	43	43	43	43	43	43	43	43	43
NOX	-	-	-	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
Hg	-	0.000696	0.000696	0.000377	0.000377	0.000377	0.000377	0.000377	0.000377	0.000377	0.000377	0.000377	0.000218	0.000218	0.000218	0.000218	0.000218	0.000218	0.000218	0.000218	0.000218
Tons Actual from PaR (1000s)																					
CO2	54,167	53,971	52,914	50,354	48,668	46,045	45,517	47,276	47,630	48,557	49,331	50,462	52,204	52,620	52,311	52,724	52,676	53,512	54,132	54,874	54,874
SO2	92	78	64	54	41	33	31	29	29	30	31	32	30	30	27	28	27	27	27	27	27
NOX	86	80	74	67	61	52	50	48	48	49	49	51	49	49	47	47	45	46	46	46	46
Hg	0.0006	0.0005	0.0004	0.0003	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Percentage Emitted above Cap																					
CO2	0.0%	0.0%	0.0%	-5.0%	-8.2%	-13.1%	-14.1%	-10.8%	-10.1%	-8.4%	-6.9%	-4.8%	-1.5%	-0.7%	-1.3%	-0.5%	-0.6%	1.0%	2.1%	3.5%	3.5%
SO2	-41.2%	-50.3%	-59.1%	-16.4%	-36.3%	-48.8%	-51.0%	-54.4%	-54.5%	-53.3%	-52.4%	-25.9%	-28.8%	-29.2%	-36.0%	-35.3%	-37.8%	-36.4%	-37.1%	-37.0%	-37.0%
NOX	0.0%	0.0%	0.0%	-3.0%	-10.8%	-24.3%	-26.7%	-29.9%	-29.4%	-29.1%	-28.2%	-26.0%	-28.7%	-29.2%	-31.9%	-32.2%	-34.8%	-33.1%	-33.6%	-33.4%	-33.4%
Hg	0.0%	-29.6%	-46.2%	-24.8%	-53.5%	-67.6%	-69.0%	-67.6%	-67.5%	-67.1%	-66.5%	-40.7%	-39.5%	-39.1%	-39.2%	-38.8%	-39.2%	-38.1%	-37.5%	-37.3%	-37.3%
Allowance Value (\$/ton)																					
CO2	-	-	-	4.15	6.34	8.62	8.78	8.94	9.10	9.26	9.43	9.60	9.77	9.95	10.13	10.32	10.52	10.72	10.92	11.13	11.13
SO2	788	962	1,087	609	637	666	696	727	531	549	568	587	607	627	638	651	663	676	688	701	701
NOX	-	-	-	-	1,145	1,167	1,188	1,209	1,231	1,253	1,276	1,299	1,322	1,346	1,371	1,397	1,424	1,451	1,479	1,499	1,499
Hg	-	-	-	14,394	15,290	16,256	17,268	18,324	19,446	20,698	22,032	23,454	24,966	26,574	27,052	27,566	28,090	28,624	29,168	29,722	29,722
Net Emission Cost (PaR Tons less Allowance Tons Multiplied by Allowance Value)																					
CO2	(210,871)	-	-	(10,991)	(27,476)	(59,970)	(65,723)	(51,196)	(48,889)	(41,168)	(34,618)	(24,390)	(7,796)	(3,804)	(7,000)	(2,871)	(3,431)	5,467	12,340	20,833	20,833
SO2	(309,661)	(50,906)	(75,749)	(100,668)	(6,407)	(14,810)	(20,832)	(22,766)	(25,343)	(18,537)	(18,743)	(19,056)	(6,486)	(7,466)	(7,819)	(9,812)	(9,804)	(10,714)	(10,498)	(10,898)	(11,062)
NOX	(165,563)	-	-	-	-	(19,112)	(21,358)	(24,380)	(24,400)	(24,549)	(24,236)	(22,741)	(25,541)	(26,443)	(29,494)	(30,247)	(33,321)	(32,313)	(33,434)	(33,916)	(33,916)
Hg	(1)	-	-	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	(686,096)	(50,906)	(75,749)	(100,668)	(17,399)	(42,286)	(99,915)	(109,848)	(100,919)	(91,826)	(84,459)	(77,910)	(53,617)	(40,803)	(38,065)	(46,306)	(42,922)	(47,466)	(37,345)	(31,992)	(24,145)

CERTIFICATE OF SERVICE

I hereby certify that I served the foregoing **OPENING COMMENTS ON PACIFICORP 2007 INTERGRATED RESOURCE PLAN BY RENEWABLE NORTHWEST PROJECT** on the following persons on September 19, 2007, by hand-delivering, faxing, e-mailing, or mailing (as indicated below) to each a copy thereof, and if mailed, contained in a sealed envelope, with postage paid, addressed to said attorneys at the last known address of each shown below and deposited in the post office on said day at Portland, Oregon:

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DATED this 19th day of September, 2007.

ESLER STEPHENS & BUCKLEY

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Of Attorneys for Renewable Northwest
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